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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/574,115

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EXAMINER

MARCHESCHI, MICHAEL A

ART UNIT

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1793

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/574,115	Applicant(s) MATSUDA ET AL.	
	Examiner Michael A. Marcheschi	Art Unit 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 February 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) 6-11 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>8/14/06, 10/2/06, 1/7/08</u> . | 6) <input type="checkbox"/> Other: _____ |

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Applicant's election of Group I, claims 1-5 in the reply filed on 2/14/08 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

The disclosure is objected to because of the following informalities:

Throughout the disclosure, applicants refer to "completely saponified polyvinyl alcohol" (PVA) and the examiner is unclear as to how PVA can be saponified because saponification is hydrolysis of ester linkages and PVA has no ester linkages, thus the examiner is unclear as to how an alcohol can be saponified.

In addition, the specification is objected to because it defines complete saponification (hydrolyzation?) and "complete" mean 100%, however, the specification clearly states that the degree of saponification can be 98% thus this is not "complete".

Appropriate correction is required.

Claims 1-5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 is indefinite as to the limitation "completely saponified polyvinyl alcohol" (PVA) because PVA cannot be saponified since saponification is hydrolysis of ester linkages and PVA has no ester linkages, thus the examiner is unclear as to how an alcohol can be saponified. In addition, the claim defines "complete saponification (hydrolyzation?) and "complete" means

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100%, however, according to the specification, the degree of saponification can be 98% thus this is not "complete". In view of this, the claim is indefinite in view of the disclosure.

The other claims are indefinite because they depend on indefinite claims.

For the purpose of this action "completely saponified (hydrolyzed?) polyvinyl alcohol" (PVA) is viewed as being 98% saponified (hydrolyzed?), as is apparent from the specification.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 and 5 are rejected under 35 U.S.C. 103(a) as obvious over Sahota et al. '418 (US equivalent to JP 2003514374) in view of JP 2003124158.

Sahota et al. teaches in the abstract, column 43, lines 38-45, column 7, line 19 and the claims, a polishing composition for polishing Cu/Ta substrate comprising colloidal silica (i.e.

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polishing composition defined as a colloidal suspension, thus the silica is colloidal silica), an anticorrosive, water and PVA (98% hydrolyzed). This reference fails to teach the acid component. However, it is obvious to add an acid (citric acid) to the composition according to the primary reference because polishes for polishing Cu/Ta layers are known to contain this acid, as a notoriously well known conventional polishing additive, as shown by the JP reference (i.e. the function of this material will aid in the polishing properties of the composition). In view of this, the addition of any known conventional additive to the composition according to the primary reference is of routine knowledge in the art absent clear evidence to the contrary. The motivation for using this additive is that it is a conventionally known additive to be used in composition for the same purpose and thus one skilled in the art would have found it obvious to include any conventionally known additive in the composition defined by the primary reference.

Claims 2-4 are rejected under 35 U.S.C. 103(a) as obvious over Sahota et al. '418 (US equivalent to JP 2003514374) in view of JP 2003124158, as applied to claim 1 above and further in view of Tsuchiya et al. (872).

The addition of an oxidizing agent (claim 2) to the slurry according to Sahota et al. '418 (US equivalent to JP 2003514374) in view of JP 2003124158, as defined above, would have been obvious to the skilled artisan motivated by the fact that this component is a notoriously well known conventional additive to be added to polishes for polishing Cu/Ta layers and that said material optimizes polishing accuracy and efficiency as well as adjusting the polishing rate to a proper value (see Tsuchiya et al. in sections 0030-0031). All these effects define beneficial

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reasons for using oxidizers, thus the motivation is clearly the beneficial results obtained when employed in polishing compositions.

With respect to the size of the colloidal silica (claim 3), although not defined by the primary reference, this is obvious because the primary reference teaches that colloidal silica is used and this would clearly suggest to the skilled artisan that the lack of an abrasive size implies that any conventional size for the abrasive can be used as long as it provides the necessary abrasive action. In view of this, one skilled in the art would have found it obvious to use any known conventional abrasive size, such as the size defined by Tsuchiya et al. in sections 0027-0028, as the colloidal silica particles size according to Sahota et al. '418 (US equivalent to JP 2003514374) because this abrasive particle size is conventionally known to provide the necessary abrasive action in polishing compositions. In addition, one skilled in the art would have appreciated the size required to achieve polishing, said size being conventional in the art, as is clearly shown by Tsuchiya et al. Finally, one skilled in the art would have also known by routine experimentation and optimization the desired abrasive size needed to produce the desired abrasive character of the reference polishing composition.

With respect to claim 4, although the combined references do not literally state that 2 different sized colloidal silica's are used, it is the examiners position with the size being obvious (see above) and since this size is defined by a range (i.e. 10-300 nm as defined by Tsuchiya et al.), the polishing composition will inevitably contain different size colloidal silica particles because not all of the particles will be of the same size absent evidence to the contrary.

Claims 1-3 and 5 are rejected under 35 U.S.C. 102(b) as anticipated by Tsuchiya et al. (872).

Tsuchiya et al. teaches in sections 0002, 0008 and 0027-0050, a polishing composition for polishing Cu/Ta substrate comprising colloidal silica having a size of 10-500 nm, an anticorrosive, an acid (citric, etc.), an oxidizer, water and PVA.

The claimed invention is anticipated by the reference because the reference teaches all of the claimed components. With respect to the PVA, in view of above indefiniteness of “completely saponified polyvinyl alcohol” (see above), the PVA in the reference reads on the claimed PVA because the examiner does not understand how PVA can be saponified. It is the examiners position that the final product is PVA irrespective of how it was made (assuming saponification of acetate) absent clear evidence to the contrary.

Claim 4 is rejected under 35 U.S.C. 103(a) as obvious Tsuchiya et al. (872).

With respect to claim 4, although the reference does not literally state that 2 different sized colloidal silica's are used, it is the examiners position that since this size is defined by a range (i.e. 10-300 nm as defined by Tsuchiya et al.), the polishing composition will inevitably contain different size colloidal silica particles because not all of the particles will be of the same size absent evidence to the contrary.

The following is an alternative rejection to the ones defined above based on Tsuchiya et al. (872).

Claims 1-5 are rejected under 35 U.S.C. 103(a) as obvious over Tsuchiya et al. (872) in view of Sahota et al. '418.

Assuming *arguendo* about the specific PVA used in the primary reference, this, however, is obvious to the skilled artisan because the primary reference uses PVA and this would clearly suggest to the skilled artisan that the lack of a saponification degree implies that any conventional saponification degree for the PVA can be used as long as it provides the necessary characteristics to the polishing composition. In other words, it is the examiner's position that absent a teaching of the saponification degree would clearly imply to the skilled artisan that the PVA used can include any PVA having any saponification degree.

Since the secondary reference teaches that PVA with the claimed saponification degree is notoriously known to be used in compositions for polishing Cu/Ta layers, its use thereof as the PVA in the primary reference is well within the scope of the skilled artisan. The motivation for using this specific saponification degree for PVA is that it is a conventionally known saponification degree for PVA to be used in composition for the same purpose and thus one skilled in the art would have appreciated that the PVA defined by the primary reference can include any conventionally known PVA absent clear evidence of criticality.

With respect to claim 4, although the combined references do not literally state that 2 different sized colloidal silica's are used, it is the examiner's position that since this size is defined by a range (i.e. 10-300 nm as defined by Tsuchiya et al.), the polishing composition will inevitably contain different size colloidal silica particles because not all of the particles will be of the same size absent evidence to the contrary.

The additional references cited on the 1449 have been reviewed by the examiner and are considered to be art of interest since they are cumulative to or less than the art relied upon in the above rejections. On the IDS filed 8/14/06 US document AK has not been considered because it is not the correct patent number, however, the IDS filed 10/2/06 has corrected this document number and thus said document has been considered on the IDS of 10/2/06.

Any foreign language documents submitted by applicant has been considered only to the extent of the short explanation of significance, English abstract or English equivalent, if appropriate.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael A Marcheschi whose telephone number is (571) 272-1374. The examiner can normally be reached on M-F (8:00-5:30) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo can be reached on (571) 272-1233. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Michael A Marcheschi/
Primary Examiner, Art Unit 1793